

ABSTRACT OF THE DISCLOSURE

A process for producing a silicon single crystal which is doped with highly volatile foreign substance by pulling the single crystal from a melt which is held under predetermined process conditions in a crucible. A quantity of the foreign substance N_0 is added in order to achieve a desired resistance of the melt, and the melt, after a time t , is after-doped at least once with a quantity $\Delta N(t)$ of the foreign substance, in order to compensate for losses caused by the foreign substance evaporating out of the melt. The quantity $\Delta N(t)$ of the foreign substance is calculated according to the equation

$$\Delta N(t) = N_0 - N(t) = N_0 \cdot (1 - e^{-\lambda_a t})$$

or according to the approximation equation

$$\Delta N(t) = N_0 \cdot \lambda_a \cdot t$$

where λ_a is an evaporation coefficient which describes a process-specific evaporation behavior of the foreign substance and which is obtained after a resistance profile $R(t)$ of a further single crystal has been measured and by calculation according to the equation

$$R(t) = R_0 \cdot e^{-\lambda_a t}$$

where R_0 is a starting resistivity and the further single crystal is pulled under the predetermined process conditions without being after-doped with the foreign substance.